

# **Construction Site Planning and Management Tools for Water Quality Protection**

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California is seemingly a developer's paradise. Population is on the rise, the economy is good, and there is little or no rain to interfere with construction for nearly eight months of the year. To top off these benefits, the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Board) has a comprehensive Construction Site Planning and Management Program (Program). It is based on the integration of a strong regulatory and enforcement posture, an outreach and education strategy, and technical assistance. The keys to the success of the program are the balance of actions among these elements and implementation tools for actions within them.

## **Background**

The Regional Board is the state agency in California responsible for protection of water quality and enforcement of water pollution control regulations, including National Pollutant Discharge Elimination System (NPDES) permits. The California Water Code provides the Regional Board with strong enforcement authority. This authority ranges from a notice to comply, to a notice of violation, to enforcement orders, to monetary penalties. Penalties can be as high as \$10,000 per day of violation or \$10 for each gallon of waste discharged. The Regional Board may also suspend part of a penalty in exchange for an environmentally beneficial project.

In the San Francisco Bay Region, the Regional Board is responsible for enforcement of a general NPDES permit for stormwater discharges from construction sites of five acres or greater. The general permit requires implementation of an effective Stormwater Pollution Prevention Plan (SWPPP) that includes best management practices (BMPs) for erosion and sediment prevention and control and management of equipment, materials, and wastes. The Regional Board is also responsible for enforcement of NPDES permits for municipal stormwater discharges that have been issued to all municipalities (regardless of population) in the urban areas of the region. These permits include requirements to control discharges from construction sites (regardless of size). There is an inherent overlap of Regional Board and municipality authority over construction of five acres or greater. The Regional Board's Program recognizes and takes advantage of this overlap of authority.

## **Inspections**

The Regional Board initiated an aggressive construction site inspection and enforcement effort in 1997. This resulted in discovery of significant water quality problems associated with sediment discharges caused by minimal or token erosion and sedimentation control actions. Some of the most common observations were:

- No permit.
- SWPPP not developed, not implemented, or deficient, especially in terms of timing.
- Mass grading allowed to continue throughout winter months until rain and muddy conditions make further work impossible.
- Mass grading continues past the time when grasses will grow and germinate; first rains simply carry seed/mulch away with eroded soil.
- No erosion control measures; reliance solely on sediment basins.
- Sediment basins are frequently undersized, improperly designed, and not maintained.

- Site not monitored to assess BMP effectiveness.
- SWPPP not updated to reflect changes in site conditions.
- Hillsides stabilized with hydroseed, but no mulch (resulting in rains carrying seed material away with eroded soils).
- Control measures driven by “tokenism” with control measures intended to demonstrate good intentions rather than real effectiveness.
- Willingness to risk fines in order to maximize work during winter (rainy season) months.
- Local agencies, specifically planners and engineers with plan-approval authority, often unaware of “best” management practices.
- Sites approved by local authorities for mass grading during rainy season.
- Local authorities review and approve erosion control plans but do not inspect sites.

## **Enforcement Actions**

Several types of enforcement actions evolved from these findings. The first consisted of the development and issuance of a “Notice to Comply” (Figure 1). Often (25 - 35 % of the time) operators at a site are unaware of their requirements or appropriate BMPs. The Notice to Comply is essentially a “fix-it” ticket that results in no further enforcement action if corrective action is implemented. Regional Board inspectors are authorized to issue Notices to Comply in the field, and use of this simple enforcement tool has proven to be an effective mechanism to gain timely corrective action at construction sites.

Other enforcement tools are used in circumstances where the severity of the problem warrants more intensive enforcement action. These include, in terms of progressive severity: a Notice of Violation, a Cleanup and Abatement Order, and a Cease and Desist Order. Violations of any of these actions typically lead to more aggressive enforcement action. The most aggressive enforcement action is imposition of administrative civil liability (monetary penalties).

During the 1997/98 rainy season the Regional Board imposed over \$1 million in penalties, ranging from \$10,000 to \$230,000. A major consideration in determining penalty amounts is ensuring that it does not pay to pollute. Due to the economic and time pressures associated with many development projects, minor penalties may simply constitute a cost of doing business. The Regional Board has clearly stated its intolerance to this circumstance and intends to severely penalize repeat offenders. Clearly, such penalties not only get the attention of the violator, but the building industry as a whole. Substantive penalties have also provided opportunities to fund environmental education projects in lieu of direct payment of penalties. The Regional Board has favorably accepted development of technical assistance tools as appropriate mitigation projects.

## **Education and Outreach**

The Regional Board recognizes that regulation without education is ineffective. Consequently, its program includes extensive outreach efforts. These include:

- Mass mailing to construction projects of more than five acres and projects permitted for winter grading summarizing requirements and findings on inadequate performance
- Meeting with development community and local agencies prior to the rainy season (August through September) to better communicate concerns and requirements and to establish a dialogue
- Providing detailed guidance and training for both developers and municipalities on their responsibilities and on effective control approaches

**San Francisco Bay Regional Water Quality Control Board**  
1515 Clay Street, Suite 1400, Oakland, CA 94612 /Phone (510) 622-2300 - FAX (510) 622-2460

**NOTICE TO COMPLY**

You are hereby notified that \_\_\_\_\_ (hereafter Discharger) has violated provisions of: ☐  
Order No. \_\_\_\_\_

☐ NPDES Permit No. (if applicable) \_\_\_\_\_

☐ California Water Code Section \_\_\_\_\_

• I Other \_\_\_\_\_

Federal, State, and Local Agency Contacts: \_\_\_\_\_

**I. FACILITY INFORMATION**

Inspection Date: \_\_\_\_\_ Time: \_\_\_\_\_ Prior Notification: ☐ Yes ☐ No ☐ Unknown

Discharger Contact: \_\_\_\_\_ Title: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_

Site Name & Location: \_\_\_\_\_ County: \_\_\_\_\_

Headquarters/Owner Name & Address : \_\_\_\_\_

**II. NON-COMPLIANCE INFORMATION**

Nature of Violation :	Recommendation to Correct :	Time to Comply (Not to exceed 30 days)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**III. SIGNATURE SECTION**

I acknowledge receipt of this Notice (must be owner, operator, or duly designated representative of facility):

RECIPIENT NAME (print): \_\_\_\_\_

TITLE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

STAFF NAME: \_\_\_\_\_

P H O N E : ( - ) \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

**IV. CERTIFICATION OF COMPLIANCE**

Sign and return by mail or fax within 5 working **days** of achieving compliance

**FOR REG. BD. USE ONLY**

I certify under penalty of perjury that the above violation(s) have been corrected.

I am aware that there are significant penalties for submitting false information.

Receipt Date: \_\_\_\_\_

/ /

Acceptable:

☐ No ☐ Yes

Reviewed by: \_\_\_\_\_

Recommendation: \_\_\_\_\_

Date: \_\_\_\_\_

Recipient Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

Figure 1. Notice to Comply

The objectives of these outreach efforts are:

- Commitment from the construction industry to include erosion control in their planning, scheduling, and (most importantly) project implementation
- Commitment from municipalities to play a greater role in SWPPP review and implementation, including training inspectors so that builders, municipal staff, and Regional Board staff are all on the same page - thereby allowing for consistent regulation of construction activities by applying a uniform standard.

In response, the building industry and municipalities have collaborated with the Regional Board on the production of training workshops on construction site planning and management for both building industry and municipal staffs. The workshops provide a review of regulations and responsibilities including:

- State responsibilities
- Permits for work in or near streams
- Local agency responsibilities
- Plan approval authority and requirements
- On-Site responsibilities (plans, permits, inspections)
- Inspector responsibilities
- Enforcement
- Field inspection coordination (i.e., state agency/municipality)

The workshops also include training on BMPs for erosion and sediment control (principles, tools, corrective measures, inspections, monitoring, reporting), non-stormwater discharge prevention and management, and a field trip to an active construction site where vendors demonstrate both proper and improper installation practices.

Production of the workshops has been funded in part through mitigations associated with administrative civil liability fines. Similarly, penalty mitigation funds have been used to develop education tools including:

- An 18 minute training video entitled "Hold on to Your Dirt: Preventing Erosion from Construction Projects" which provides information on BMPs for grading projects and for stabilizing disturbed land
- An 18 minute training video entitled "Keep it Clean: Preventing Pollution from Construction Projects," which provides information on BMPs to prevent water pollution from non-stormwater discharges from activities such as painting, stucco, concrete washout facilities and saw cutting
- A booklet of "Guidelines for Preparing a Storm Water Pollution Prevention Plan"

## **Erosion and Sediment Control Field Manual**

The centerpiece of the Regional Board's Program is an *Erosion and Sediment Control Field Manual* (also developed with penalty mitigation funds). The *Field Manual* was produced in response to a common complaint by "field" personnel that there is a need for information on cost-effective and proven BMPs, and that existing references were too technical and difficult to read. The *Field Manual* contains concise descriptions of BMPs for erosion and sediment control and site management (Table 1). Overviews of regulatory requirements and inspection and monitoring responsibilities are also provided.

Table 1. Erosion and Sediment Control Field Manual **BMPs**

Erosion and Sediment Control Field Manual <b>BMPs</b>	
Erosion and Sediment Control Practices	
<ul style="list-style-type: none"> <li>• Scheduling</li> <li>• Preservation of Existing Vegetation</li> <li>• Slope Grading</li> <li>• Temporary Seeding and Mulching</li> <li>• Permanent Seeding and Mulching</li> <li>• Hydromulching – Hydroseeding</li> <li>• Dust Control</li> <li>• Erosion Control Blankets and Geotextiles</li> <li>• Fiber Rolls</li> <li>• Temporary Stream Crossing</li> <li>• Stabilized Construction Entrance</li> <li>• Entrance/Exit Tire Wash</li> </ul>	<ul style="list-style-type: none"> <li>• Outlet Protection – Energy Dissipation</li> <li>• Check Dams</li> <li>• Silt Fencing</li> <li>• Temporary Straw Bale Dike</li> <li>• Sand/Gravel Bag Barrier or Rock Filter</li> <li>• Storm Drain Inlet Protection</li> <li>• Catch Basin Inlet Filters</li> <li>• Sediment Basin</li> <li>• Sediment Traps</li> <li>• Dewatering: sediments/toxic pollutants</li> <li>• Secondary Filtration</li> </ul>
General Site and Materials Management Practices	
<ul style="list-style-type: none"> <li>• Water Conservation Practices</li> <li>• Solid and Demolition Waste Management</li> <li>• Hazardous Waste Management</li> <li>• Spill Prevention and Control</li> <li>• Vehicle and Equipment Service</li> <li>• Material Delivery, Handling, and Storage</li> <li>• Paints and Liquid Materials</li> </ul>	<ul style="list-style-type: none"> <li>• Handling and Disposal of Concrete and Cement</li> <li>• Pavement Construction Management</li> <li>• Contaminated Soil and Water Management</li> <li>• Sanitary/Septic Waste Management</li> <li>• Landscaping Management</li> </ul>

BMPs are described in a user-friendly format that features full-color graphics, including do and don't illustrations (Figure 2). Each BMP description includes its purpose, application, limitations, practices, inspection, and maintenance. There is a section on Corrective Measures that discusses what can go wrong and common installation problems. This latter section is essentially a troubleshooting guide that contains a table of common problems and corresponding corrective measures. Overviews of regulatory requirements and inspection and monitoring responsibilities are also provided. The *Field Manuals* waterproof 9" x 9" binder and coated pages make it ideal for use in the field. As such, it provides the essential connection between the enforcement, outreach, and technical assistance components of the Regional Board's Program.

## Overlap of State and Municipal Authorities

The Regional Board's Program provides a clear demonstration of how the Storm Water Phase II Program's construction requirements may be implemented. The Phase II rule allows states to recognize compliance with municipal program construction requirements as equivalent to compliance with a state-issued NPDES permit for construction, if it can be demonstrated that the municipal program requirements are equivalent. In such situations, a construction site deemed in compliance with a municipality's requirements would be deemed in compliance with the state-issued NPDES permit. The key is demonstration that the municipal program qualifies as equivalent.

In the San Francisco Bay area, as previously noted, the Regional Board has issued NPDES permits for municipal stormwater discharges that include requirements to control discharges from construction sites. In essence, there is an overlap of Regional Board and municipal authority where municipalities are in compliance with their permit requirements.

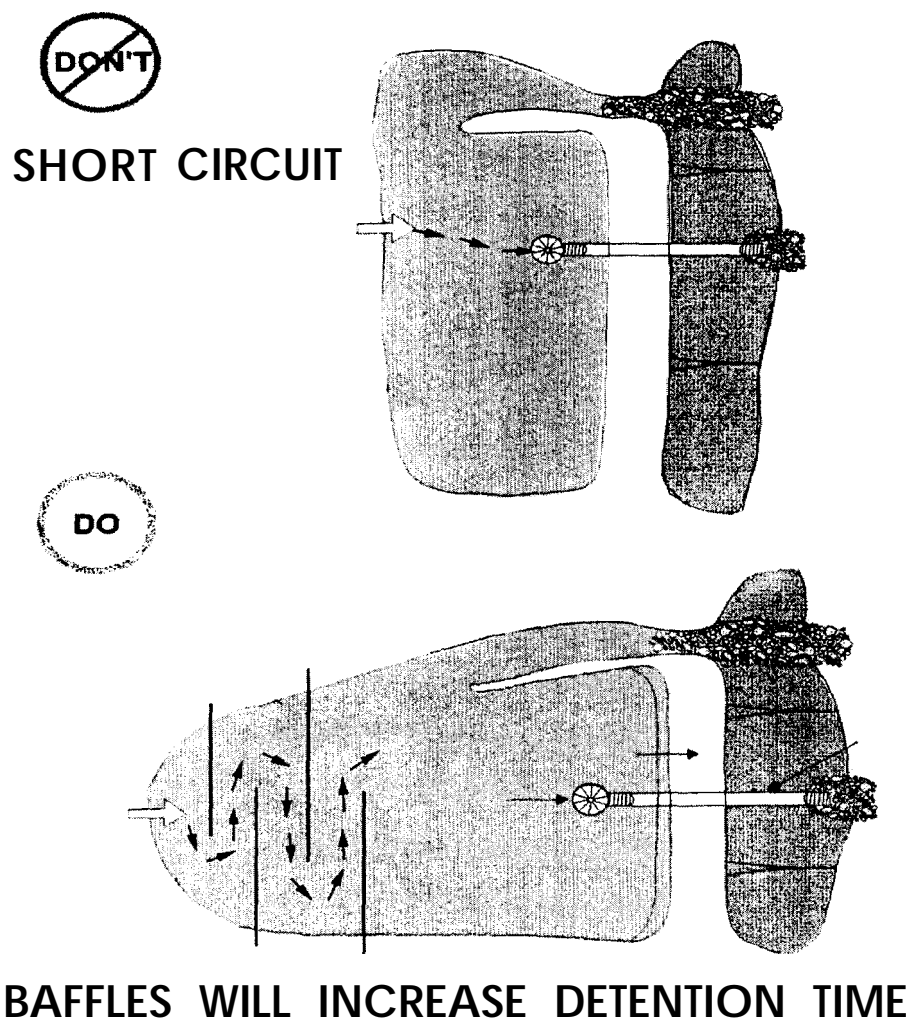


Figure 2. Sediment Basin Design.

Unfortunately, what may seem equivalent on paper may not be equivalent in practice. The case in point is that the Regional Board's inspection program noted above identified many construction sites out of compliance with their construction NPDES permits. Consequently, these same construction sites would be deemed in non-compliance with municipal requirements. In addition, the same inspection findings can be applied to the municipality. Since the municipality's NPDES permit requires it to control discharges from construction sites, construction site non-compliance means the municipality is not in compliance with its NPDES permit. In these circumstances, the Regional Board may (and has) taken enforcement action against both the construction site and the municipality.

To date, the primary enforcement tool used for the municipalities has been Notice to Comply. The Notice to Comply requires the municipality to report on the failure of its construction control program and to implement timely corrective actions. Most municipalities have been very responsive to this "wake-up-call," and have made improvements to demonstrate the desired "equivalency." The net result is a negative turning into a positive. The Regional Board's Program, with its balance between enforcement and education, has provided a *de facto* mechanism for recognizing municipal program equivalency allowed by the Phase II rule. By its design and implementation, the program essentially

requires municipalities to demonstrate such equivalency. Consequently, the Regional Board will significantly reduce or eliminate its inspections in municipalities where Regional Board inspections find construction sites in compliance, thus providing incentive and reward to both the building industry and municipalities.

## **Lessons Learned**

Lessons learned in the development and implementation of the Regional Board's Program are summarized in the following points:

- . The only effective means of controlling erosion is erosion prevention, which requires careful planning and adherence to seasonal time-lines. Sediment capture should be used only as a secondary or back-up plan.
- . Regulation without education is ineffective. Often, noncompliance is due to lack of awareness of the regulatory requirements and cost-effective, proven **BMPs**.
- Education without enforcement is impotent. Despite good intentions, the building industry is constantly trying to maximize its investment dollars, and environmentally sound **BMPs** are often superseded by time pressures to complete a project.
- Enforcement actions must be severe enough that they cannot be accepted as a cost of doing business.
- The balance between regulation and education is dependent on readily available technical assistance and implementation tools.
- Outreach and technical assistance needs to be directed to the right audiences. Workshop agendas and attendance were initially misdirected toward planners and local decision makers. Key attendees are municipal staff who actually review SWPPP plans and perform on-site inspections and building industry staff who are onsite. Evaluations revealed attendees wanted more technical information on installation and less time spent on municipal general plan/environmental plug. Audiences are especially responsive to builders discussing their experiences in implementing **BMPs**.
- Both the building industry and municipalities have historically short shrifted training. Workshop attendees expressed relief that practicable training is finally available - especially information on vendors, cost comparisons, and practical **BMPs**. The building industry and municipalities now realize costs of training are minimal relative to the benefit.

## **Conclusions**

The bottom line is that environmental regulators, municipalities, and the building industry have different priorities that must be reconciled. Regulators seek no adverse impacts to waters. Municipalities seek economic growth. Builders want unfettered development. In the case of construction-related erosion, the means to each end is the same...effective erosion and sediment control. A little more work on the part of each party involved has proven that their different priorities are attainable and even harmonious.

Since the Regional Board made enforcement a top priority and began a collaborative effort with the building industry and municipalities to provide cost-effective outreach and training, construction site compliance with NPDES permit requirements has risen from 20% three years ago to greater than 90% today. Municipal compliance has risen similarly.